Africa RISING: Transforming African agriculture through sustainable intensification

A woman farmer standing next to a maize - pigeon pea intercropping demonstration plot in Tanzania

Photo: Africa RISING

Africa RISING Program

The Africa Research In Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development as part of the U.S. government's Feed the Future initiative. Launched in 2011, the program's main objective is to identify and validate scalable options for sustainable intensification of key African farming systems to increase food production and improve livelihoods of smallholder farmers and at the same time conserve or improve the natural resource base.

Through action research and development partnerships, Africa RISING is creating opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base. The three Africa RISING regional research projects focus on:

- Sustainable Intensification of Crop - Livestock Farming Systems in the Guinea and Sudano Savannah Zone of West Africa (led by the International Institute of Tropical Agriculture, IITA);
- Sustainable intensification of crop-livestock systems to improve food security and farm income diversification in the Ethiopian highlands (led by the International Livestock Research Institute, ILRI); and
- Sustainable Intensification of Cereal – Legume – Livestock Integrated Farming Systems in East and Southern Africa (led by IITA).

The International Food Policy Research Institute (IFPRI) is responsible for monitoring, evaluation, and impact assessment across all three projects.

Project partners

Partners are drawn from various organizations including: international agricultural research centers, national research and extension systems, universities, national government ministries, non-governmental organizations, private sector, community based organizations, development partners as well as producer and farmer associations.

Sustainable Intensification of Cereal – Legume – Livestock Integrated Farming Systems in East and Southern Africa

A conservation agriculture trial in Zambia Photo: J. Oliver

Project sites

The project is implemented in three districts in Tanzania - Babati and Kiteto in Manyara Region of northern Tanzania as well as Kongwa District in Dodoma Region. In Malawi, the project activities are implemented in Ntcheu and Dedza Districts in central Malawi. Activities in Zambia are implemented in Katete and Chipata in the Eastern Province and Lusaka District.

Project interventions

The project targets small holder farming communities as end-users. Through participatory action research, the project is identifying and testing the best practices for integrating crops and livestock, land management, and linking farming and marketing to nutrition and health.

Interventions being implemented include: introduction of improved crop varieties (high yielding, disease resistant, drought tolerant, nutritious and marketable food and feed crops); dissemination of best-bet crop management packages (efficient appliation of organic and inroganic fertilizers and/or integration of legumes in the crop rotation e.g. doubled-up legume technology); rehabilitation and protection of natural resources (rain water harvesting, rain use efficiency and controling soil erosion); improving food and nutrition security (reducing post-harvest losses and addressing mycotoxin contamination) as well as climate change mitigation and biodiversity conservation. They are widely disseminated by partners for scaling up and wider adoption in the project sites and beyond.

Sustainable Intensification of Crop - Livestock Farming Systems in the Guinea and Sudano Savannah Zone of West Africa

Sheep and goats feed on legume shrub fodder in northern Ghana Photo: A. Larbi

Project sites

The project is implemented in 25 communities in northern Ghana - Northern Region, Upper West and Upper East Region. In Mali, activities are implemented in 10 villages in the Bougouni - Yanfolila and Koutiala Districts of the Sikasso Region in southern Mali.

Project interventions

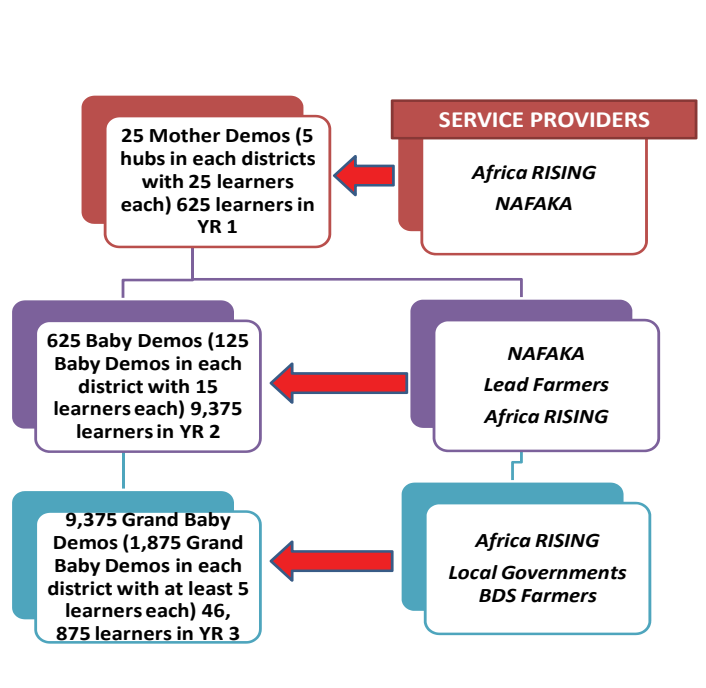
Participatory research and extension approaches including multi-stakeholder research-for-development (R4D) platforms are used to identify constraints and plan appropriate interventions. The activities include testing and dissemination of improved crop varieties (drought and striga resistant, food–feed crops) and livestock breeds (dairy goats and sheep); appropriate agronomic practices (planting density, intercropping and cereal-legume rotations, multiple cropping, and agroforestry) and animal husbandry practices (semi-intensive and intensive management, dry season supplementation, vaccination and deworming etc).

The project interventions also involve value-addition, reducing pre- and postharvest losses, linking farmers to input and output markets, as well as ensuring better integration of the crop and livestock enterprises. Additionally, approaches to improve household nutrition, especially that of women and children, are also being tested. Group and individual training and short courses are being used to strengthen the capacities of all actors not only in production, utilization, and processing skills but also in leadership, marketing, and communication skills to encourage farmer-to-farmer learning and extension. Academic trainees at MSc and PhD level are engaged to address important knowledge gaps.

The Africa RISING scaling approach

The project used GIS mapping techniques to select research sites in order to ensure that they have development domains that are representative of other parts of the regions and that results can be extrapolated to other areas. The development domains are based on a combination of agricultural potential, population densities and market access. The sites were selected to cover a wide range of different geographical areas. Econometric modeling is being used to assess the replicability of the results and scalability to other settings.

In addition to the R4D platforms as a means for disseminating project results, Africa RISING is also partnering with development organizations such as other USAID funded projects working with farmers to ensure scaling of research results. An example for this approach is the recently started project "*Enhancing partnership among Africa RISING, NAFAKA and TUBORESHE CHAKULA Programs for fast-tracking delivery and scaling of agricultural technologies in Tanzania*" funded by the USAID Mission in Tanzania. Through this collaboration, Africa RISING is providing technologies that have been tested and evaluated as best performing by farmers and scientists in form of knowledge and technology packages to NAFAKA and TUBORESHE CHAKULA for wide dissemination within their networks of beneficiaries.



Scaling model for the for the tripartite Africa RISING, NAFAKA and TUBORESHE CHAKULA project activities. Spill-over numbers are not depicted in the model.

"Business-case" technologies for scaling

Categoriies of the selected "business-case" technologies in the tripartite Africa RISING, NAFAKA and TUBORESHE CHAKULA project.

The following technologies have been selected for scaling through the tripartite Africa RISING, NAFAKA and TUBORESHE CHAKULA project:

- Improved varieties of food crops that increase production and nutrition. These include; maize, common beans, groundnuts, soybean and vegetables.
- Best-bet agronomic management packages around the most promising new crop varieties suited to widely representative agro-ecological zones and market proximity. For example the Two-by two staggered intercropping arrangement for maize-legumes commonly known as "MBILI". The technique consists of twin rows of maize 50cm apart adjacent to 1m strip reserved for legumes (e.g. groundnut, bush bean). This altered intercropping, besides improving soil fertilization and land use efficiency, also disrupts pest cycles resulting in increased crop value and has been shown (through the project trials) to result in higher returns on capital for small-holder farmers.
- Natural resource conservation practices like tied ridges and ripping hard pans that conserve soil moisture and minimize erosion.
- Locally adapted and nutrient-rich vegetables for increased household nutrition especially improved varieties of tomato (*Solanum lycopersicon*, Tengeru 2010), African eggplant (*Solanum macrocarpon*; Tengeru white) and amaranth (*Amaranthus spp.*; Madiira 1) have been introduced. These new varieties performed better than the local varieties.
- Introduce technologies for storage of maize, rice, legumes and selected vegetable crops. Use of the Grainpro collapsible solar dryer and the Grainpro Super Grain Bag (SGB) in Babati has reduced food spoilage after harvest thereby minimizing farmers' losses arising from poor storage. Demonstrations of the SGB in Babati showed that recovery of maize stored in SGB was 100% after 8 months storage. At harvest, the price of maize was TSh. 360-420 kg, but rose to TSh. 780 kg over the storage period. This means that SGB storage makes it possible for a farmer to earn a profit margin ranging from 80 -100%. This is a potential incentive for technology uptake in addition to the fact that the SGB bags are affordable ($2 per bag).
- Capacity services to members of grassroots farmer associations, platform partners and development institutions in the scaling process to enhance the skills of agricultural communities paying particular attention to the special opportunities available to women farmers as technical and nutritional innovators, and resource managers.

Leveraging research-for-development (R4D) platforms to capitalize on project outputs

R4D platform meeting underway in Babati District,Tanzania

Photo: P. Hillbur

Africa RISING has main outcomes clustered as research and development results. The research results address issues of generation and adoption of integrated innovations that sustainably increase productivity of farming systems. The development results focus on strengthening livelihoods and resilience of communities following adoption of sustainable intensification innovations.

Through the research-for-development (R4D) platforms, project stakeholders set the research and cropping priorities for the coming seasons, discuss broader issues on land management, market access and capacity building for the next generation of farmers. The platforms are therefore a meeting-point to stimulate learning and innovation as well as a vehicle for scaling successful strategies across and beyond the project activity sites. The R4D platform membership is usually composed of farmers, extension workers, researchers, NGOs, policy makers, private sector representatives and local government representatives of various sectors beyond agriculture.

Contacts

Dr. I. Hoeschle-Zeledon
Coordinator, Africa RISING West Africa and East/Southern Africa Projects
E-mail: i.zeledon@cgiar.org

Prof. M. Bekunda
Chief Scientist, Africa RISING East and Southern Africa
E-mail: m.bekunda@cgiar.org

Dr. A. Larbi
Chief Scientist, Africa RISING West Africa
E-mail: a.larbi@cgiar.org

http://africa-rising.net

CGIAR FEED THE FUTURE The U.S. Government's Global Hunger & Food Security Initiative USAID FROM THE AMERICAN PEOPLE

ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE IFPRI IITA Research to Nourish Africa